UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

JUN 28 2005

SE-5J

VIA FACSIMILE (312) 917-1572 AND U.S. MAIL

Mr. John Latoza
The Rise Group
120 South LaSalle, Suite 1750
Chicago, Illinois 60603

RE: U.S. EPA Comment Letter dated June 1, 2005, Regarding Work at 160 East Illinois, Chicago, Illinois

Dear Mr. Latoza:

Thank you for discussing the contents of your document title "Summary of Radiological Survey and Monitoring Conducted at 160 East Illinois, Chicago, Il" ("Survey Summary")dated May 23, 2005. Our discussions on June 3, 2005 with Eugene Jablonowski and me, then again on June 6, 2005, with Larry Jensen and me, and subsequent discussions this month helped to clarify several matters.

First, it appears that in our review of your Survey Summary we mistakenly stated that you had not addressed four comments in our May 12, 2005 transmittal memorandum as you had addressed those comments in your May 23, 2005 submittal.

Second, on June 6, we discussed the use of 7.2 picoCuries per gram (pCi/g) throughout the document. We have agreed that you can use a footnote stating that even though your instrument was calibrated in West Chicago, Illinois to 7.2 pCi/g, by multiplying by the fraction 7.1/7.2, the appropriate clean-up criterion is 18,243 counts per minute (cpm), which will be used during the next survey. It is not necessary to revise your current data sheets, but make this change in the future and emphasize as appropriate that the clean-up criterion is 7.1 pCi/g in Streeterville.

Third, with respect to your language in **Memorandum Re: Scope of Work for Soil Survey**, that appears on Page 1, second paragraph, the first sentence ending with: "...resulted in residual contamination from thorium, a radioactive element." It is acceptable to state instead, "..from thorium and related contaminants." Comments made about Option A and Option B can be incorporated once the City indicates their preferred option.

Fourth, regarding the results of the portable multi-channel analyzer, Berkeley Nucleonics SAM 935 Portable Gamma Spectroscopy System (SAM), we suggest the following text:

> Cn February 16 and 17, 2005, GeoSyntec Consultants (with the aid cf Glenn Huber (Stan Huber & Associates)) conducted a radiological survey of the partially demolished 160 East Illinois Building (Kieffer Building). During this survey, GeoSyntec noted, documented and marked with spray paint two locations of elevated

radioactivity on the floors: "spot 13600" on the 2nd floor; and "spot 12500" on the 6th floor. On February 18, 2005, U.S. EPA Region 5 staff visited the Kieffer Building to conduct screening measurements and assess the two locations of elevated radioactivity found by GeoSyntec. U.S. EPA checked these spots with its Berkeley Nucleonics SAM 935 Portable Gamma Spectroscopy System (SAM), which identified the presence of thorium contaminated at these two spots. These findings are noted in SAM spectra 5 and 6 for "spot 13600" and SAM spectra 10 and 11 for "spot 12500". Since these spots were small in size and did not exceed U.S. EPA's cleanup criteria for the Streetêrville area, it was determined that these spots did not require remediation. Enclosed are copies of all the SAM spectra printouts.

Finally, if you start work on or after July 5, 2005 in the right-of-ways or alley and encounter thorium contamination during that work a Quality Assurance Project Plan (QAPP) will be required. Note also, that post July 5, we would prefer to not split samples, but to analyze the same material. Enclosed is a copy of our gamma spectroscopy procedure.

If you have any questions regarding this correspondence, please contact me at (312) 886-3601, Larry Jensen at (312) 886-5026, or Eugene Jablonowski at (312) 886-4591. Please direct any legal questions to Mary Fulghum, Associate Regional Counsel, at (312) 886-4683 or Cathleen Martwick, Associate Regional Counsel, at (312) 886-7166.

Sincerely,

Verneta Simon

Verneta Simon
On-Scene Coordinator

cc: Richard Berggreen, GeoSyntec Consultants, w/enclosures

Enclosures 13:
Spectrum # 1-12
Gamma Spectroscopy Procedure

bcc: Mary Fulghum, C-14J, w/enclosures
Charles Gebien, SE-5J, w/o enclosures
Eugene Jablonowski,SR-6J,w/enclosures
Larry Jensen, SMF-4J,w/enclosures
Mike Joyce, P-19J,w/o enclosures
Cathy Martwick, C-14J,w/enclosures
James Mitchell, SE-5J,w/enclosures
Debbie Regel, SE-5J,w/enclosures

BACKGROUND REPORT

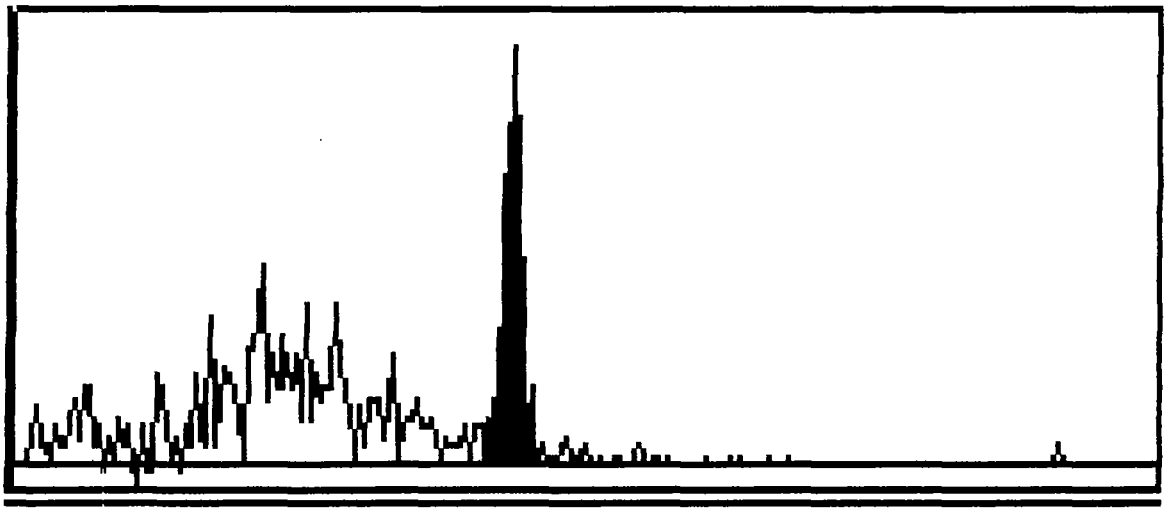
		SAVED AS:	Spectrum # 1
DATE:	18-Feb-2005 11:36	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	4740	HIGH DISC:	100.05%
		ELAPSED LT:	59.85
GROSS INTEGRAL:	4729	ELAPSED RT:	59.90
		DEAD TIME:	0.08%

FULL SCALE: 127

MCA REPORT

		SAVED AS: Spectrum # 2	
DATE:	18-Feb-2005 11:42	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	11052	HIGH DISC:	100.05%
NET CPM:	6311	ELAPSED LT:	6.46
GROSS INTEGRAL:	1190	ELAPSED RT:	6.51
NET INTEGRAL:	679	DEAD TIME:	0.77%

FULL SCALE: 44



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
111	658.4	1904	92	46	1764 *q*	7.56	Cs137

1 OF 1 LIBRARY LINES FOR Cs137 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
661.7	658.9	85.21	1764

NUCLIDES NOT PRESENT:

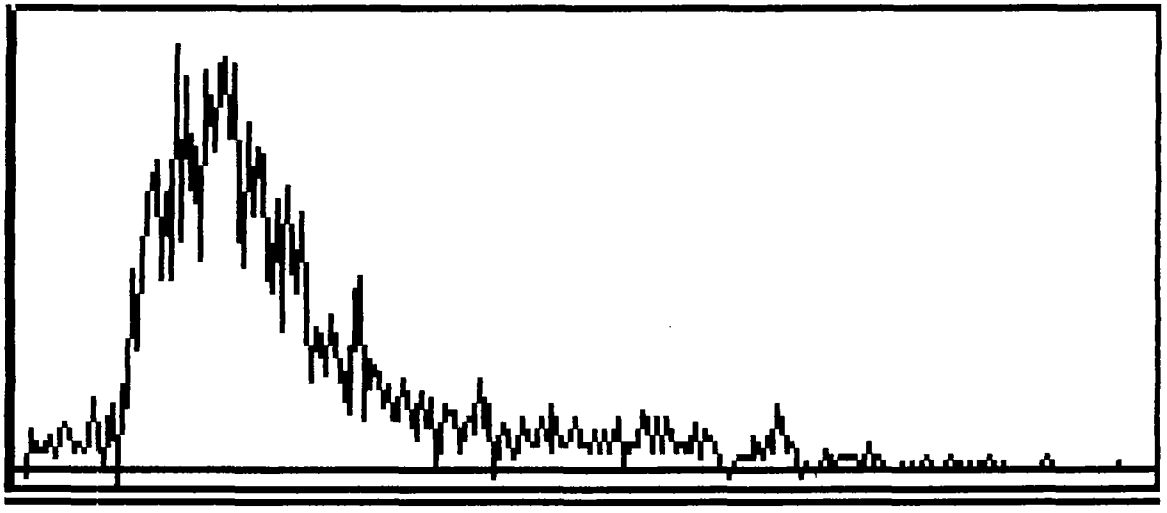
0 OF 9 LIBRARY LINES FOR	Ac228 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Am241 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Bi212 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	Bi214 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	K40 FOUND	Correlation =	0.00
0 OF 0 LIBRARY LINES FOR	Name FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pb210 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	Pb212 FOUND	Correlation =	0.00
0 OF 5 LIBRARY LINES FOR	Pb214 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pu239 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Ra224 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Ra226 FOUND	Correlation =	0.00
0 OF 4 LIBRARY LINES FOR	Th232 FOUND	Correlation =	0.00
0 OF 5 LIBRARY LINES FOR	Tl208 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	U235 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	U238 FOUND	Correlation =	0.00

LINES NOT ASSOCIATED WITH ANY NUCLIDE:

MCA REPORT

		SAVED AS: Spectrum # 3	
DATE:	18-Feb-2005 11:43	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	12259	HIGH DISC:	100.05%
NET CPM:	7518	ELAPSED LT:	19.66
GROSS INTEGRAL:	4017	ELAPSED RT:	19.77
NET INTEGRAL:	2463	DEAD TIME:	0.56%

FULL SCALE: 67

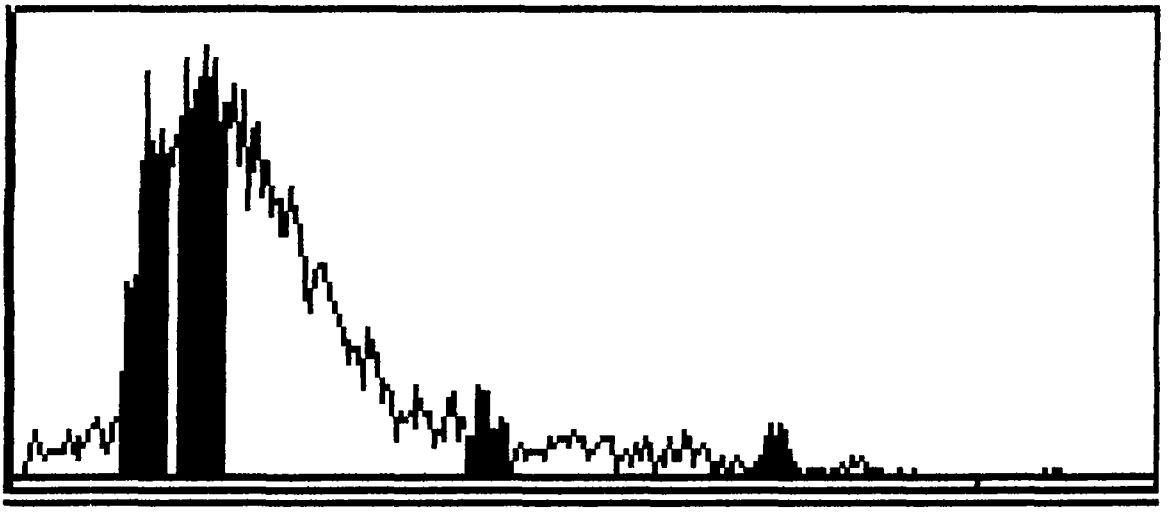


NO PEAKS FOUND

MCA REPORT

		SAVED AS: Spectrum # 4	
DATE:	18-Feb-2005 11:44	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	13002	HIGH DISC:	100.05%
NET CPM:	8262	ELAPSED LT:	61.08
GROSS INTEGRAL:	13237	ELAPSED RT:	61.35
NET INTEGRAL:	8410	DEAD TIME:	0.44%

FULL SCALE: 188



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
29	76.9	2187	970	826	390 *q*	14.3	
42	130.2	2739	995	1593	151 *q*	40.1	
106	606.9	367	118	183	64 *q*	33.8	
171	1441.1	190	52	26	111 *q*	13.8	K40

1 OF 1 LIBRARY LINES FOR K40 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
1461.0	1439.3	10.67	111

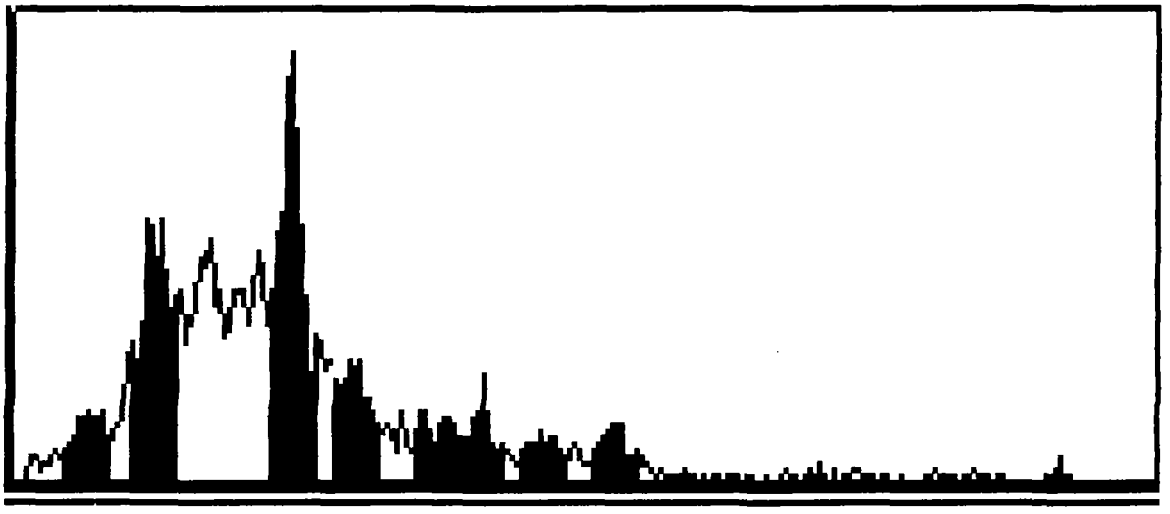
NUCLIDES NOT PRESENT:

1 OF 2 LIBRARY LINES FOR	Bi214 FOUND	Correlation =	0.45
1 OF 2 LIBRARY LINES FOR	Pb212 FOUND	Correlation =	0.20
1 OF 3 LIBRARY LINES FOR	Ra226 FOUND	Correlation =	0.16
1 OF 5 LIBRARY LINES FOR	Pb214 FOUND	Correlation =	0.04
1 OF 4 LIBRARY LINES FOR	Th232 FOUND	Correlation =	0.01
1 OF 5 LIBRARY LINES FOR	Tl208 FOUND	Correlation =	0.00
1 OF 9 LIBRARY LINES FOR	Ac228 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Am241 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Bi212 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Cs137 FOUND	Correlation =	0.00
0 OF 0 LIBRARY LINES FOR	Name FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pb210 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pu239 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Ra224 FOUND	Correlation =	0.00

MCA REPORT

		SAVED AS: Spectrum # 5	
DATE:	18-Feb-2005 11:45	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	15358	HIGH DISC:	100.05%
NET CPM:	10617	ELAPSED LT:	78.93
GROSS INTEGRAL:	20204	ELAPSED RT:	79.38
NET INTEGRAL:	13967	DEAD TIME:	0.57%

FULL SCALE: 424



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
17	37.7	675	218	309	147 *q*	18.3	
32	85.2	2625	1045	1182	396 *q*	13.9	Pb212
62	241.0	2517	508	1229	779 *q*	6.31	Pb212
77	343.3	1049	289	647	112 *q*	29.3	Th232
95	495.0	592	145	334	111 *q*	21.9	
105	597.0	631	127	346	157 *q*	15.7	Th232
118	734.9	364	54	183	125 *q*	14.5	
134	921.5	402	48	179	174 *q*	10.8	
179	1576.9	95	16	28	49 *q*	19.1	
233	2580.1	70	4	20	45 *q*	16.7	

2 OF 2 LIBRARY LINES FOR Pb212 FOUND Correlation = 0.88

LINE	PEAK	INTENSITY	NET CPM
78.7	84.1	35.70	396
238.6	241.6	43.30	779

1 OF 1 LIBRARY LINES FOR Ra224 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
241.0	241.6	3.97	779

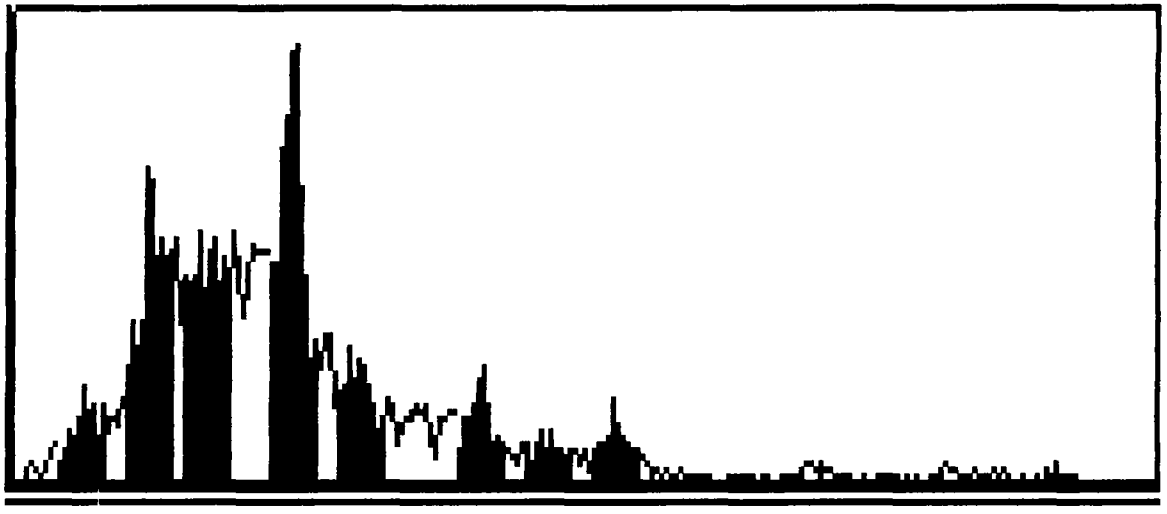
4 OF 4 LIBRARY LINES FOR Th232 FOUND Correlation = 0.73

LINE	PEAK	INTENSITY	NET CPM
86.0	84.1	14.00	396
238.6	241.6	15.00	779

MCA REPORT

		SAVED AS: Spectrum # 6	
DATE:	18-Feb-2005 11:47	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	15527	HIGH DISC:	100.05%
NET CPM:	10786	ELAPSED LT:	65.28
GROSS INTEGRAL:	16894	ELAPSED RT:	65.43
NET INTEGRAL:	11735	DEAD TIME:	0.23%

FULL SCALE: 329



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
17	37.4	625	189	318	117 *q*	23.5	
31	82.5	2588	999	1268	319 *q*	18.2	Pb212
42	131.0	2534	984	1379	170 *q*	33.9	
62	242.7	2495	509	1314	671 *q*	7.88	Pb212
76	340.4	955	273	596	85 *q*	39.7	Th232
105	593.7	633	127	358	147 *q*	18.1	Th232
120	750.5	321	53	247	21 *q*	88.4	
134	924.6	382	48	171	161 *q*	12.4	
233	2568.5	69	4	4	60 *q*	13.7	

2 OF 2 LIBRARY LINES FOR Pb212 FOUND Correlation = 0.87

LINE	PEAK	INTENSITY	NET CPM
78.7	82.5	35.70	319
238.6	242.8	43.30	671

1 OF 1 LIBRARY LINES FOR Ra224 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
241.0	242.8	3.97	671

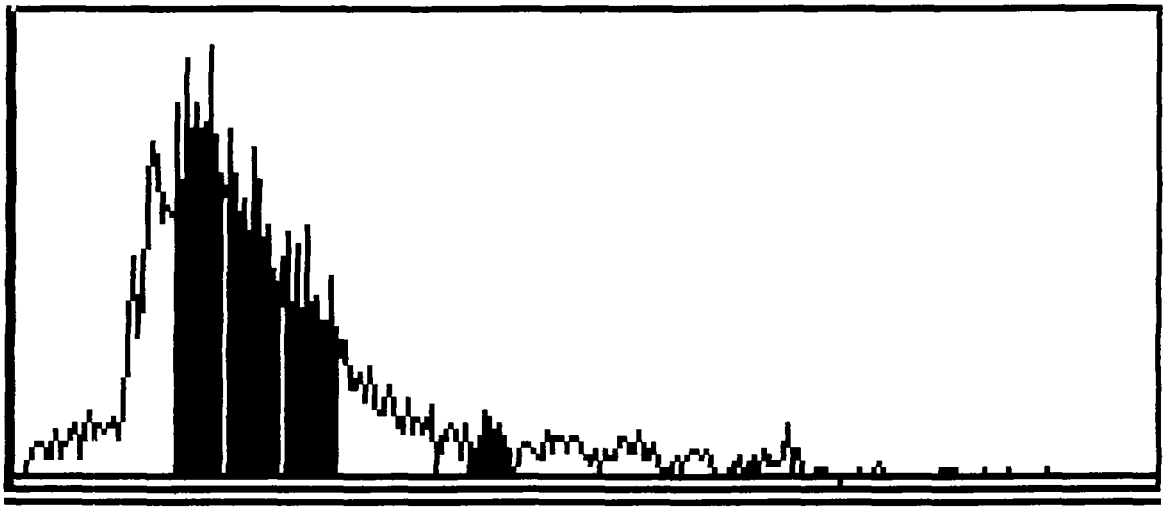
4 OF 4 LIBRARY LINES FOR Th232 FOUND Correlation = 0.70

LINE	PEAK	INTENSITY	NET CPM
86.0	82.5	14.00	319
238.6	242.8	15.00	671
347.0	348.5	4.00	85

MCA REPORT

		SAVED AS: Spectrum # 7	
DATE:	18-Feb-2005 11:57	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	12701	HIGH DISC:	100.05%
NET CPM:	7961	ELAPSED LT:	53.17
GROSS INTEGRAL:	11256	ELAPSED RT:	53.42
NET INTEGRAL:	7054	DEAD TIME:	0.47%

FULL SCALE: 186



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %
40	122.2	2822	1011	1452	358 *q*	18.1
54	189.0	2086	717	1191	177 *q*	31.3
65	260.7	1364	399	849	115 *q*	38.3
106	607.0	328	118	179	30 *q*	72.6

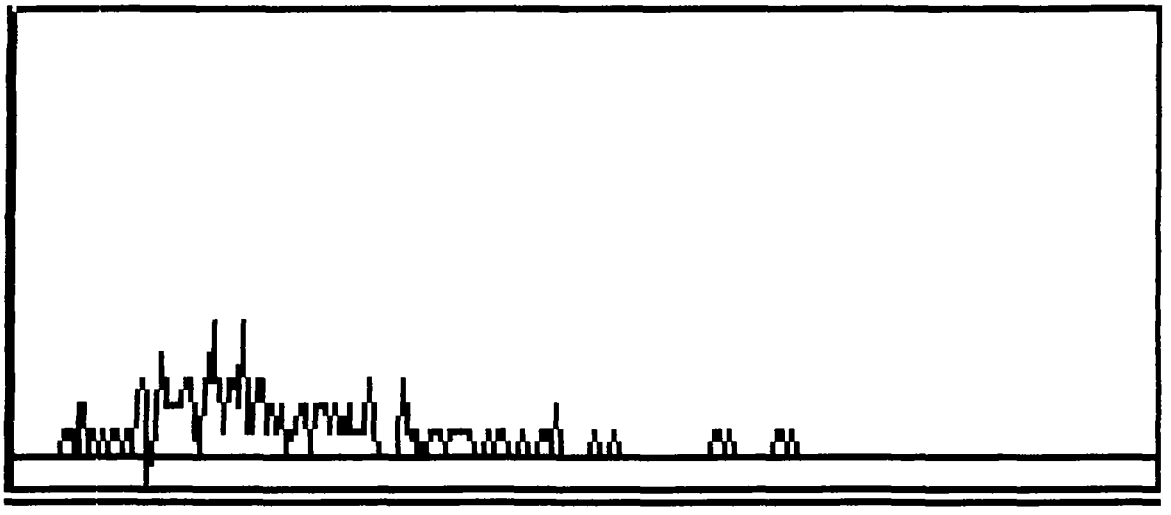
NUCLIDES NOT PRESENT:

1 OF 2 LIBRARY LINES FOR	U235 FOUND	Correlation =	0.48
1 OF 2 LIBRARY LINES FOR	Bi214 FOUND	Correlation =	0.45
2 OF 3 LIBRARY LINES FOR	Ra226 FOUND	Correlation =	0.23
1 OF 4 LIBRARY LINES FOR	Th232 FOUND	Correlation =	0.01
2 OF 9 LIBRARY LINES FOR	Ac228 FOUND	Correlation =	0.00
1 OF 5 LIBRARY LINES FOR	Tl208 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Am241 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Bi212 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Cs137 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	K40 FOUND	Correlation =	0.00
0 OF 0 LIBRARY LINES FOR	Name FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pb210 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	Pb212 FOUND	Correlation =	0.00
0 OF 5 LIBRARY LINES FOR	Pb214 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pu239 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Ra224 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	U238 FOUND	Correlation =	0.00

MCA REPORT

		SAVED AS: Spectrum # 8	
DATE:	18-Feb-2005 11:58	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	9813	HIGH DISC:	100.05%
NET CPM:	5072	ELAPSED LT:	1.07
GROSS INTEGRAL:	175	ELAPSED RT:	1.07
NET INTEGRAL:	90	DEAD TIME:	0.00%

FULL SCALE: 16

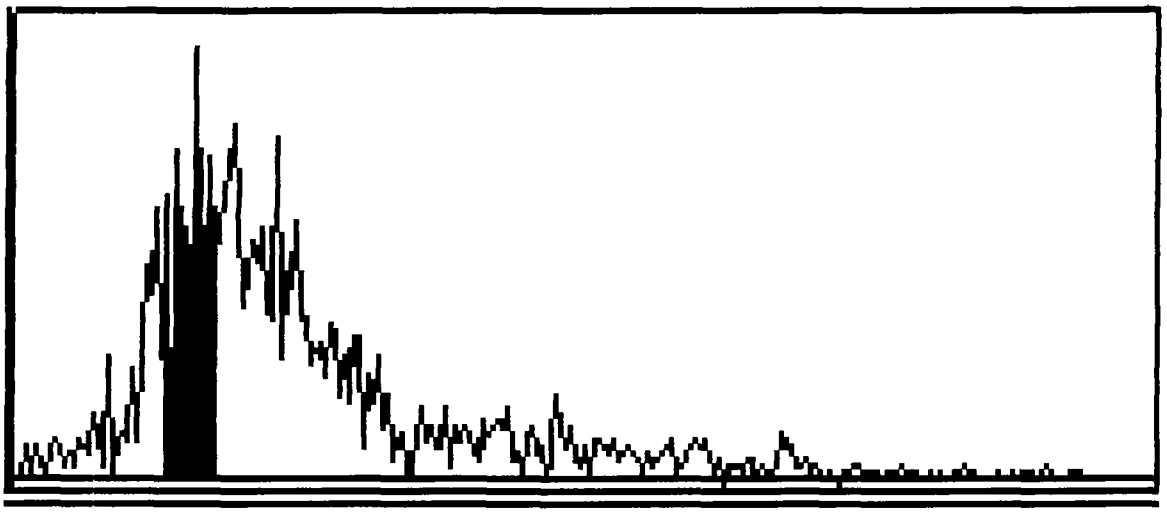


NO PEAKS FOUND

MCA REPORT

		SAVED AS: Spectrum # 9	
DATE:	18-Feb-2005 11:58	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	11358	HIGH DISC:	100.05%
NET CPM:	6617	ELAPSED LT:	18.79
GROSS INTEGRAL:	3557	ELAPSED RT:	18.85
NET INTEGRAL:	2072	DEAD TIME:	0.32%

FULL SCALE: 66



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %
39	116.7	2449	1047	1088	312 *q*	30.1

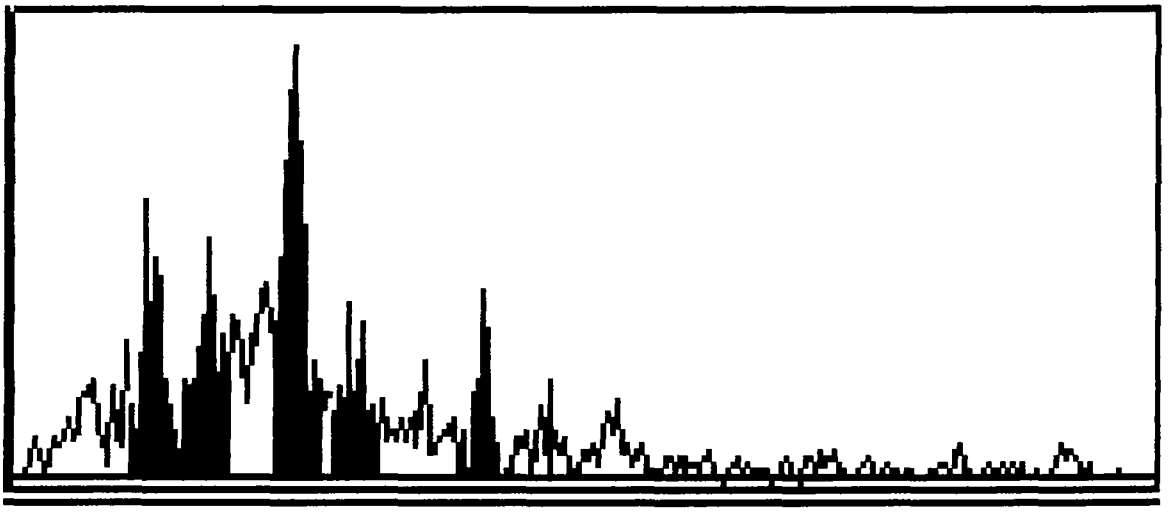
NUCLIDES NOT PRESENT:

0 OF 9 LIBRARY LINES FOR	Ac228 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Am241 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Bi212 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	Bi214 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Cs137 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	K40 FOUND	Correlation =	0.00
0 OF 0 LIBRARY LINES FOR	Name FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pb210 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	Pb212 FOUND	Correlation =	0.00
0 OF 5 LIBRARY LINES FOR	Pb214 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Pu239 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	Ra224 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Ra226 FOUND	Correlation =	0.00
0 OF 4 LIBRARY LINES FOR	Th232 FOUND	Correlation =	0.00
0 OF 5 LIBRARY LINES FOR	Tl208 FOUND	Correlation =	0.00
0 OF 2 LIBRARY LINES FOR	U235 FOUND	Correlation =	0.00
0 OF 1 LIBRARY LINES FOR	U238 FOUND	Correlation =	0.00

MCA REPORT

		SAVED AS: Spectrum # 10	
DATE:	18-Feb-2005 11:59	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	12380	HIGH DISC:	100.05%
NET CPM:	7639	ELAPSED LT:	13.56
GROSS INTEGRAL:	2798	ELAPSED RT:	13.64
NET INTEGRAL:	1726	DEAD TIME:	0.59%

FULL SCALE: 63



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
31	84.4	2008	1044	389	575 *q*	17.3	Pb212
42	128.5	1858	982	460	415 *q*	23.1	
63	249.0	2053	473	752	827 *q*	11.8	Pb212
76	339.2	898	287	460	150 *q*	43.4	
105	592.1	592	115	22	455 *q*	11.5	

2 OF 2 LIBRARY LINES FOR Pb212 FOUND Correlation = 0.94

LINE	PEAK	INTENSITY	NET CPM
78.7	82.8	35.70	575
238.6	246.5	43.30	827

1 OF 1 LIBRARY LINES FOR Ra224 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
241.0	246.5	3.97	827

NUCLIDES NOT PRESENT:

1 OF 2 LIBRARY LINES FOR	Bi214 FOUND	Correlation =	0.45
4 OF 4 LIBRARY LINES FOR	Th232 FOUND	Correlation =	0.41
1 OF 5 LIBRARY LINES FOR	Tl208 FOUND	Correlation =	0.18
1 OF 3 LIBRARY LINES FOR	Ra226 FOUND	Correlation =	0.16
3 OF 5 LIBRARY LINES FOR	Pb214 FOUND	Correlation =	0.15
2 OF 9 LIBRARY LINES FOR	Ac228 FOUND	Correlation =	0.01
0 OF 1 LIBRARY LINES FOR	Am241 FOUND	Correlation =	0.00
0 OF 3 LIBRARY LINES FOR	Bi212 FOUND	Correlation =	0.00

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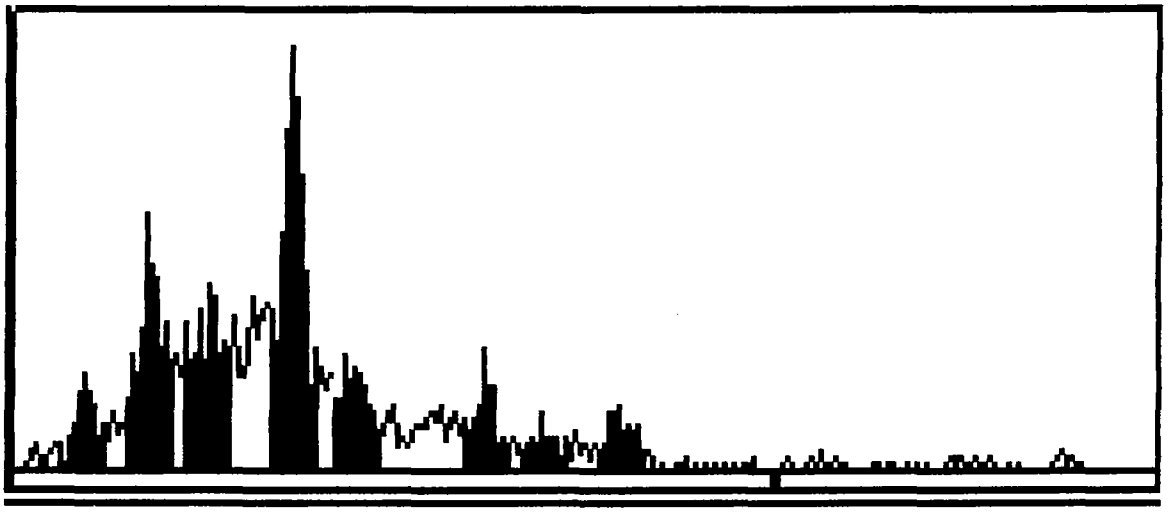
0 OF 1 LIBRARY LINES FOR  Cs137 FOUND   Correlation =   0.00
0 OF 1 LIBRARY LINES FOR    K40 FOUND   Correlation =   0.00
0 OF 0 LIBRARY LINES FOR   Name FOUND   Correlation =   0.00
0 OF 1 LIBRARY LINES FOR  Pb210 FOUND   Correlation =   0.00
0 OF 1 LIBRARY LINES FOR  Pu239 FOUND   Correlation =   0.00
0 OF 2 LIBRARY LINES FOR   U235 FOUND   Correlation =   0.00
0 OF 1 LIBRARY LINES FOR   U238 FOUND   Correlation =   0.00

LINES NOT ASSOCIATED WITH ANY NUCLIDE:
 Energy    Net CPM   Eff Corrected
  136.1      415.9        9251.4  C
  343.8      150.4        6411.2  C
  593.9      455.8       44788.8  C
```

MCA REPORT

		SAVED AS: Spectrum # 11	
DATE:	18-Feb-2005 11:59	BIAS:	742
EN CAL DATE:	18-Feb-2005 11:36	COARSE GAIN:	1
		FINE GAIN:	1.34
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	11976	HIGH DISC:	100.05%
NET CPM:	7235	ELAPSED LT:	67.20
GROSS INTEGRAL:	13414	ELAPSED RT:	67.31
NET INTEGRAL:	8104	DEAD TIME:	0.16%

FULL SCALE: 292



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
16	36.3	536	189	171	175 q	14.7	
31	81.9	1977	1000	603	374 q	14.1	Pb212
43	134.1	1855	983	691	179 q	28.6	
63	245.1	2015	508	908	598 q	8.03	Pb212
76	335.9	814	289	383	141 q	22.5	Th232
105	596.4	520	118	294	107 q	22.6	Th232
119	742.4	261	54	141	65 q	26.0	
136	941.1	331	50	127	153 q	12.1	

2 OF 2 LIBRARY LINES FOR Pb212 FOUND Correlation = 0.92

LINE	PEAK	INTENSITY	NET CPM
78.7	81.5	35.70	374
238.6	244.4	43.30	598

4 OF 4 LIBRARY LINES FOR Th232 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
86.0	81.5	14.00	374
238.6	244.4	15.00	598
347.0	339.7	4.00	141
590.0	597.0	3.20	107

1 OF 1 LIBRARY LINES FOR Ra224 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
241.0	244.4	3.97	598

NUCLIDES NOT PRESENT:

1 OF 2	LIBRARY LINES FOR	Bi214	FOUND	Correlation = 0.45
1 OF 3	LIBRARY LINES FOR	Bi212	FOUND	Correlation = 0.31
3 OF 9	LIBRARY LINES FOR	Ac228	FOUND	Correlation = 0.30
2 OF 5	LIBRARY LINES FOR	Tl208	FOUND	Correlation = 0.26
3 OF 5	LIBRARY LINES FOR	Pb214	FOUND	Correlation = 0.17
1 OF 3	LIBRARY LINES FOR	Ra226	FOUND	Correlation = 0.16
0 OF 1	LIBRARY LINES FOR	Am241	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	Cs137	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	K40	FOUND	Correlation = 0.00
0 OF 0	LIBRARY LINES FOR	Name	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	Pb210	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	Pu239	FOUND	Correlation = 0.00
0 OF 2	LIBRARY LINES FOR	U235	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	U238	FOUND	Correlation = 0.00

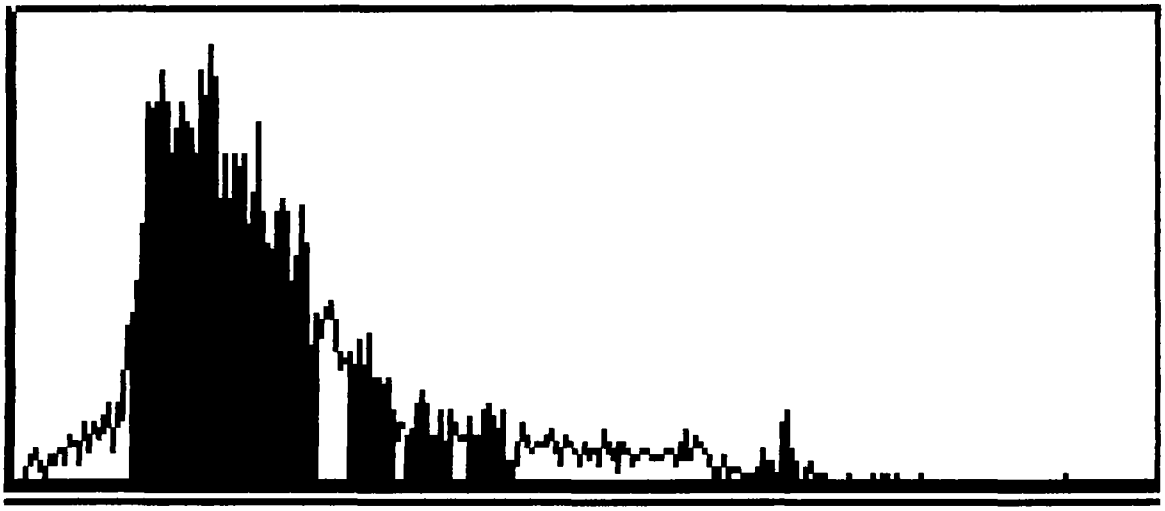
LINES NOT ASSOCIATED WITH ANY NUCLIDE:

Energy	Net CPM	Eff Corrected	
35.8	175.9	6043.9	C
136.7	179.5	4041.1	C
737.0	65.2	9764.9	C
941.5	153.6	35562.4	C

MCA REPORT

		SAVED AS: Spectrum # 12	
DATE:	18-Feb-2005 12:13	BIAS:	742
EN CAL DATE:	18-Feb-2005 12:09	COARSE GAIN:	1
		FINE GAIN:	1.31
BKG DATE:	18-Feb-2005 11:36	LOW DISC:	0.41%
GROSS CPM:	14923	HIGH DISC:	100.05%
NET CPM:	10182	ELAPSED LT:	68.54
GROSS INTEGRAL:	17048	ELAPSED RT:	68.69
NET INTEGRAL:	11632	DEAD TIME:	0.22%

FULL SCALE: 271



PEAKS FOUND

CHN	ENERGY (keV)	GROSS CPM	AMBIENT CPM	CONTINUUM CPM	NET CPM	UNC %	
31	84.5	2884	1046	1463	374 *q*	16.0	Pb212
43	132.9	3088	995	1839	253 *q*	24.0	
51	174.6	2426	749	1564	112 *q*	47.5	
63	245.5	1826	508	1174	142 *q*	32.2	Pb212
80	367.9	897	248	505	143 *q*	22.4	Pu239
92	469.8	524	154	322	47 *q*	52.4	
106	606.0	430	119	192	119 *q*	18.7	
172	1452.3	210	52	91	67 *q*	22.9	K40

2 OF 2 LIBRARY LINES FOR Pb212 FOUND Correlation = 0.87

LINE	PEAK	INTENSITY	NET CPM
78.7	85.1	35.70	374
238.6	244.1	43.30	142

1 OF 1 LIBRARY LINES FOR K40 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
1461.0	1456.5	10.67	67

1 OF 1 LIBRARY LINES FOR Pu239 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM
379.0	368.3	1.00	143

1 OF 1 LIBRARY LINES FOR Ra224 FOUND Correlation = 0.80

LINE	PEAK	INTENSITY	NET CPM

241.0	244.1	3.97	142

NUCLIDES NOT PRESENT:

1 OF 2	LIBRARY LINES FOR	U235	FOUND	Correlation = 0.48
1 OF 2	LIBRARY LINES FOR	Bi214	FOUND	Correlation = 0.45
2 OF 3	LIBRARY LINES FOR	Ra226	FOUND	Correlation = 0.35
3 OF 4	LIBRARY LINES FOR	Th232	FOUND	Correlation = 0.34
2 OF 5	LIBRARY LINES FOR	Pb214	FOUND	Correlation = 0.09
2 OF 9	LIBRARY LINES FOR	Ac228	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	Am241	FOUND	Correlation = 0.00
0 OF 3	LIBRARY LINES FOR	Bi212	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	Cs137	FOUND	Correlation = 0.00
0 OF 0	LIBRARY LINES FOR	Name	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	Pb210	FOUND	Correlation = 0.00
0 OF 5	LIBRARY LINES FOR	Tl208	FOUND	Correlation = 0.00
0 OF 1	LIBRARY LINES FOR	U238	FOUND	Correlation = 0.00

LINES NOT ASSOCIATED WITH ANY NUCLIDE:

Energy	Net CPM	Eff Corrected	
133.4	253.9	5700.6	C
184.8	112.9	2816.5	C
475.9	47.3	3154.8	C
607.0	119.1	12195.2	C

Operating Procedure for

Gamma Spectroscopic Analysis of Soil Samples

Analysis of soil samples for the Uranium (U-238), Thorium (Th-232) and Actinium (U-235) Decay Series using gamma spectroscopy shall be done under the following requirements.

1. Gamma spectroscopy equipment must have been calibrated within the preceding 24 months with a multi-radionuclide gamma standard (with at least 10 radionuclide gamma energies) traceable to the National Institute of Standards and Technology. Dated calibration records must be supplied to the U.S. Environmental Protection Agency Region 5 On-Scene Coordinator assigned to the project for review and concurrence before initiation of any work.

2. Sample volume shall be 400 cubic centimeters.

3. Sample count times should be set so that background concentrations used in the cleanup criterion (1.0 picocuries per gram for radium-226, 1.1 picocuries per gram for radium-228) will be quantified. In addition to reporting concentrations for radium-226 and radium-228, concentrations for all identified radionuclides in the Uranium (U-238) Decay Series, the Thorium Decay Series (Th-232), and the Actinium Decay Series (U-235) shall be reported, along with the concentration of potassium-40.

4. The complete library of gamma ray energies for gamma spectroscopy used in obtaining soil concentrations (including gamma lines used for quantification, MDC generation, interference correction, etc.) shall be reported.

5. The gamma spectroscopy analysis shall use a Library Energy Tolerance of 1.2 kilo-electron volts and a Gamma Fraction Limit of 71%. Both the Library Energy Tolerance and the Gamma Fraction Limit shall be denoted numerically in all sample analytical reports.

6. The sample analytical report shall include all data and, <u>at least</u>,

   Sample ID
   Sample Size
   Spectrum File
   Sample Collection date and time
   Counting Start date and time
   Sample Count Time
   Efficiency File

Efficiency File ID
Library File
Library File ID
Efficiency Algorithm
Gamma Fraction Limit
Library Energy Tolerance
Decay Limit
Final Activity Report
Unknown Peaks

7. A copy of a sample analytical report shall be provided to the U.S. Environmental Protection Agency before work commences. This sample analytical report will be identical in format and parameters to the sample analytical reports for the project.

8. All sample analytical reports shall be supplied to the U.S. Environmental Protection Agency no later than 10 work days after samples are collected.

Operating Procedure for

Collection and Analysis of Verification Soil Samples

1. Sample grids of 100 square meters shall be laid out over the site to be verified. Every effort should be made to lay out square grids.

2. Five locations shall be designated within the grid---one at the center of the grid and four at points half way between the center and each corner.

3. One soil sample approximately 10 centimeters in diameter and approximately 15 centimeters deep will be taken from each of the 5 locations designated in Step 2 above. These are the approximate dimensions of a tulip bulb planter.

4. The 5 samples will be combined and sifted through a one-quarter inch screen into a stainless steel mixing bowl.

5. That part of the soil that passed through the screen will be homogenized in the mixing bowl.

6. If the soil samples are to be analyzed by gamma spectroscopy, a 400 milliliter aliquot will be taken from the mixing bowl. If the samples are to be analyzed by the NUTRANL system, 5 separate 20 milliliter bottles will be taken from the mixing bowl.

7. For soils analyzed by gamma spectroscopy, the verification concentration will be the total radium (radium-226 + radium-228) concentration. For soils analyzed by NUTRANL, the verification concentration will be the average of the total radium concentration for the 5 bottles.

8. That part of the soil that did not pass through the screen should be scanned on contact with a 2 by 2 sodium iodide detector or a FIDLER probe. If an elevated gamma count rate is detected, the material should be stored in a sample container for special analysis. If no elevated gamma count rate is detected, the material can be discarded.

9. The contractor will analyze the sample first and report the results to the U.S. Environmental Protection Agency Region 5 On-Scene Coordinator assigned to the project.

If the total radium concentration does not exceed 7.1 picocuries per gram the On-Scene Coordinator may conditionally approve the verified area as clean pending U.S. Environmental Protection Agency laboratory final verification.

10. Once the On-Scene Coordinator has conditionally approved the verified area as clean, the Potentially Responsible Party will deliver the soil sample(s) to the U.S. Environmental Protection Agency within 24 hours.

11. The U.S. Environmental Protection Agency will then deliver the sample(s) to its analytical laboratory for analysis(ses). Results from this lab will be considered the official results for verification purposes.

12. Once samples are analyzed satisfactorily, the U.S. Environmental Protection Agency will deliver the samples back to the Potentially Responsible Party for controlled disposal.